

REMARKS

In the Office Action the Examiner noted that claims 1, 3, 11, and 12 are pending in the application, and the Examiner rejected all claims. By this Amendment, claim 11 has been cancelled without prejudice or disclaimer, claim 1 has been amended to remove a grammatical error and to remove a feature added by the Amendment filed on March 22, 2006, and new claim 13 has been added. No new matter has been presented. Thus, claims 1, 3, and 12-13 are pending in the application. The Examiner's rejections are traversed below, and reconsideration of all rejected claims is respectfully requested.

Examiner Interview Conducted On July 5, 2006

The Applicants would like to express appreciation to the Examiner for the telephone interview conducted with the Examiner on July 5, 2006. During the interview, the Applicants discussed various features of the present application which the Applicants respectfully submit patentably distinguish over the prior art cited by the Examiner. Many of these features, as well as additional points, are discussed in the body of this Amendment. The Examiner noted that she would consider these arguments, but that regardless of this consideration a further search would have to be conducted due to the amendment of claim 1. By this Amendment, new claim 13 has also been added.

Regarding the several points discussed during the interview, the Applicants would like to draw special attention to the discussed feature of claim 1 which is recited thusly:

"wherein said controller controls the operation of said robot arm of said robot to move said tool body around said rotation axis while keeping said tool body in contact with said tool tip member held by said tip member holding means,"

The Applicants have respectfully submitted, both in this Amendment and during the interview with the Examiner, that at least this feature is not disclosed or suggested by U.S. Patent No. 4,733,050, issued to Grafius (hereinafter referred to as "Grafius"). In claim 1 of the present application, because the tool tip member is held by the tip member holding means, and is also in contact with the tool body being moved around the rotation axis, then the tip member holding means also has to move around the rotation axis. Further, the rotation axis that the tip member holding means moves around is offset from the tip member holding means. Because neither the loading spindle 138 nor the unloading spindle 140 moves around the other's rotation axis in Grafius, at least this feature is not disclosed or suggested in Grafius.

As a counter to this argument, the Examiner stated that there are two parts in Grafius which may be considered tip member holding means, namely the loading spindle 138 and the unloading spindle 140. The Examiner also stated that because each of these parts have a respective rotation axis, and that each of these parts are offset from the other's rotation axis, then each of the spindles 138 and 140 can be offset from the other's rotation axis while maintaining contact with the tool tip member during loading or offloading (rotating around each or their respective own rotation axes). In other words, for example, when performing an unloading operation, the unloading spindle 140 rotates around its own rotation axis, and is also offset from the rotation axis of the loading spindle 138.

However, as maintained by the Applicants during the interview and in this Amendment, the recited rotation axis about which the tip member holding means rotates is also offset from the tip member holding means itself. Claim 1 recites, in lines 7-9, "tip member holding means for holding said tip member and disposed on said rotating member **at a position that is offset from said rotation axis of said rotating member**" (emphasis added). In other words, the rotation axis around which the tip member holding means rotates is offset from the tip member holding means, because "said rotation axis" recited in line 15 of claim 1 is offset from the tip member holding means. Thus, claim 1 clearly recites that the specific rotation axis around which the tip member holding means rotates must be offset from the tip member holding means itself.

The loading spindle 138 of Grafius does not rotate around a rotation axis that is offset from the loading spindle 138 (which would be the rotation axis of the unloading spindle 140). Further, the unloading spindle 140 does not rotate around a rotation axis that is offset from the unloading spindle 140 (which would be the rotation axis of the loading spindle 138). Therefore, Grafius does not disclose or suggest at least this feature of claim 1.

Advisory Action

In the Advisory Action mailed on July 7, 2006, the Examiner stated, "Regarding independent claim 12 Applicant provides no specific argument as to the reasons for allowance over the cited prior art but instead relies upon the argument of independent claim 1, even though the two claims are [sic] significantly different in scope."

The Applicants respectfully submit that a specific argument was indeed submitted with regard to claim 12. To wit, the Applicants stated that claim 12 recites "a controller to control the operation of the robot arm to move the tool body around the rotation axis while keeping the tool

body in contact with the tool tip member by the tip member holder,” and that, as discussed in detail in regard to claim 1, at least this feature is not disclosed in Grafius. Reference was therefore made to the arguments made in regard to claim 1 that explained that neither of the spindles 138 and 140 rotate around a rotation axis that is offset from the spindles.

Nevertheless, the Applicants' arguments regarding claim 12 are presented in more detail in this Amendment to explain that at least this recited feature of claim 12 is not disclosed or suggested by Grafius.

Objections To Drawings

In item 1 on page 2 of the Office Action the Examiner objected to the drawings under 37 C.F.R. §1.83(a). The Examiner stated that the drawings must show every feature of the invention specified in the claims. The Examiner went on to state that the “rotation locking member” of claims 1 and 11, and the “elastic element” of claim 11 must be shown or the features canceled from the claims.

The Applicants respectfully submit that the features identified above by the Examiner are shown at least in Figures 5A-5B, and further described at least on page 16, line 19 through page 18, line 2 of the specification. Nevertheless, by this Amendment, claim 11 has been cancelled without prejudice or disclaimer, and claim 1 has been amended. Claim 1 in its current form does not recite the “rotation locking member” feature listed by the Examiner. Therefore, the Applicants respectfully request the withdrawal of the Examiner's objections to the drawings.

Claim Rejections Under 35 USC §112

In item 3 on page 3 of the Office Action the Examiner rejected claims 11 under 35 U.S.C. §112, first paragraph, as failing to comply with the enablement requirement. The Examiner stated that it is not clear from the disclosure how “the rotation locking member is supported on said rotating member via an elastic element.”

The Applicants respectfully submit that the features identified above by the Examiner are shown at least in Figures 5A-5B, and further described at least on page 16, line 19 through page 18, line 2 of the specification. Nevertheless, by this Amendment, claim 11 has been cancelled without prejudice or disclaimer.

Claim Rejections Under 35 USC §102

In item 5 on pages 3-5 of the Office Action the Examiner rejected claims 1, 3, 11, and 12 under 35 U.S.C. §102(b) as being anticipated by Grafius. By this Amendment, claim 11 has been cancelled without prejudice or disclaimer. The Applicants respectfully traverse the Examiner's rejections of the remaining claims.

Claim 1 of the present application recites "a base member, a rotating member rotatably supported by said base member about a rotation axis, and tip member holding means for holding said tip member and disposed on said rotating member at a position that is offset from said rotation axis of said rotating member." The Applicants respectfully submit that at least these features are not disclosed in Grafius.

The Examiner has characterized several elements of Grafius as disclosing the features of claim 1 recited above. However, the Applicants respectfully submit that the Examiner's identification of said elements does not disclose or suggest the features recited in the claim language. The Examiner stated:

'050 teaches the base the jig 110 with, for example, bracket 132 and vertical plate 126 which both can be considered a "base member", and two members 38 and 40 supported by the bracket 132 and vertical plate 126, the loading spindle 138 rotatable through the rotary motor 130, and unloading spindle 144 [sic] located at a position offset from the rotation axis of loading spindle 138, and the tip holding member of unloading spindle 140 adapted to hold the tool tip member 12 so that a central axis of relative rotation for threadedly mounting the tool tip member to the tool body extends substantially parallel to the rotation axis of loading spindle 138 and rotation of the tool tip member 12 with respect to the rotating member of the unloading spindle 138 is locked (see figure 11, col. 9, lines 26-49, for example).

Therefore, the Examiner has apparently characterized the bracket 132 as the base member, the loading spindle 138 as the rotating member supported by the base member about a rotation axis, and the tip holding member of the unloading spindle 140 as the tip member holding means. However, the Applicants note that the Examiner has not stated that the unloading spindle 140 is disposed on the loading spindle 138, which would be required if these elements identified by the Examiner were to disclose the tip member holding means disposed on said rotating member, as is recited in claim 1. In other words, the tip member holding means of claim 1 is disposed on the rotating member rotatably supported by the base member about a rotation axis. Thus, when the rotating member is rotating about the rotation axis, the tip member holding means would move around the same rotation axis at a distance away from the rotation axis. This is in direct contrast to the disclosure of Grafius, in which the unloading spindle 140

simple rotates around its own center axis, and does not rotate around the axis of the loading spindle 138, which the Examiner has characterized as the rotating member of claim 1.

In the Response to Arguments section, in item 10 on pages 8-10 of the Office Action, the Examiner went into greater detail regarding this discrepancy. To wit, the Examiner stated:

Applicant is referred, for example, to the rotated gear 134 as a specific rotating member (connecting with rotated gear 136) rotatably supported by the base member 132 about a rotation axis and a tip member (unloading spindle) 140 holding means for holding said tip member 140 and disposed on said rotating member (through the gear relationship between gears 136 and 134 within the base member 132) at a position that is offset from said rotation axis of said rotating member (see figure 11 where the rotation axis of the tip member 140 is offset from the rotational axis of the gear 134).

In this example the Examiner has identified the first gear 134 as the rotating member rotatably supported by the bracket 132 about a rotation axis, and again that the unloading spindle 140 represents the tip member holding means disposed on said rotating member at a position that is offset from said rotation axis of said rotating member. To meet the requirement that the tip member holding means be disposed on said rotating member, the Examiner stated that the unloading spindle is disposed on the first gear 134 "through the gear relationship between gears 136 and 134".

The Applicants respectfully submit that this is an unreasonable characterization of the elements of Grafius. If the unloading spindle 140 can be considered as disposed on a gear, it is obviously disposed only on the second gear 136, and not the first gear 134. The first gear 134 is operated to rotate the loading spindle 138 around the shared rotation axis of the loading spindle 138 and the first gear 134, and the second gear 136 is located to the side of the first gear 134, working in conjunction with the first gear 134 to rotate the unloading spindle 140 around the shared rotation axis of unloading spindle 140 and the second gear 136. Thus, it is quite obvious that the second gear 136 is not disposed on the first gear 134, and likewise that the unloading spindle 140 is not disposed on the first gear 134, and the Applicants respectfully submit that it would not be reasonably stated by anyone skilled in the art that the unloading spindle 140 is disposed on the first gear 134. It would be apparent to one skilled in the art that if the unloading spindle 140 were disposed on the rotating member rotatable about the rotation axis, at a position offset from the rotation axis, then the unloading spindle would rotate about that rotation axis when the rotating member rotates. This is obviously not the case in Grafius. Therefore, the claimed features are neither disclosed nor suggested by Grafius.

Further, claim 1 also recites "said tip member holding means adapted to hold said tool tip member so that a central axis of relative rotation, for threadedly mounting the tool tip member on said tool body, extends substantially parallel to said rotation axis and rotation of said tool tip member, with respect to said rotating member, is locked." In other words, the tip member holding means does not rotate around the central axis of the tip member holding means. At least these features are not disclosed or suggested in Grafius.

The Examiner has stated that these features are also disclosed in lines 26-49 of column 9, as well as figure 11, of Grafius. However, the Applicants respectfully submit that it is quite obvious that the unloading spindle 140 is not locked so as to not rotate around its central axis. Indeed, through the very gears 134 and 136 discussed by the Examiner, it is evident that the unloading spindle 140 is rotated precisely to remove the tool tip member from the robot arm 10. This is also in direct contrast to claim 1 of the present application.

Even further, claim 1 also recites "wherein said controller controls the operation of said robot arm of said robot to move said tool body around said rotation axis while keeping said tool body in contact with said tool tip member held by said tip member holding means." In other words, because the tip member holding means is offset from the rotation axis, and the robot arm keeps the tool body in contact with the tool tip member held by the tip member holding means, the tool body is moved around the rotation axis while in contact with the tool tip member. At least these features are not disclosed or suggested in Grafius.

The Examiner stated that this is disclosed in lines 32-40 of column 5 of Grafius. However, the portion of Grafius cited by the Examiner merely describes the movement of the robot arm 10 between various different stations performing different operations relative to a weld tip. The Applicants respectfully submit that this is not relative to the features recited in the claim. Further, it is evident from Figure 11 of Grafius, and the description thereof, that the only time that a tool tip member 12 is in contact with both the robot arm 10 and the loading spindle 138 or unloading spindle 140, the relative spindle 138, 140 spins around its own rotation axis to load or remove the tool tip member 12.

In discussing these recited features of claim 1, the Examiner stated:

'050 teaches the controller controls the operation of the robot arm to move the tool body around the rotation axes of loading and unloading spindles while keeping the tool body in contact with the tool tip member held by the tip member holding means for mounting and demounting the tool tip member 12 (see col. 5, lines 32-40, for example).

However, the Applicants note that the Examiner did not use the language recited in claim 1 when describing these features. To wit, claim 1 recites "to move said tool body around said rotation axis while keeping said tool body in contact with said tool tip member held by said tip member holding means." Therefore, the tool body is in contact with the tool tip member held by the tip member holding means, and moves about the rotation axis, and it has already been established in the claim that the tip member holding means is offset from the rotation axis. Therefore, the Examiner's statements regarding movement of the robot arm around each of the respective axes of the contacted loading or unloading spindle, and therefore not moving around the axis which is offset from the contacted spindle, has no bearing on the features claimed in claim 1. In fact, as the robot arm is simply located above the contacted spindle during the loading or unloading function, the robot arm is apparently not moving about any axis at all.

Thus, in Grafius, the spindle contacting the tool tip member held by the robot arm merely rotates around its own central axis, rather than around a rotation axis that the contacted spindle is offset from. Further, as the robot arm of Grafius simply stays centered over the central axis of the contacted spindle, the robot arm does not move around the rotation axis of either of the spindles at all. The fact that contacted spindle rotates around its own axis while also being offset from the rotation of the other spindle has no bearing on the recited language of claim 1, because neither of the spindles rotate around the rotation axis that they are respectively offset from. Thus, Grafius does not disclose or suggest these features of claim 1.

Therefore, Grafius does not disclose any of the many features of claim 1 discussed above. Accordingly, Grafius does not disclose every element of the Applicants' claim 1. In order for a reference to anticipate a claim, the reference must teach each and every element of the claim (MPEP §2131). Therefore, since Grafius does not disclose the features recited in independent claim 1, as stated above, it is respectfully submitted that claim 1 patentably distinguishes over Grafius, and withdrawal of the §102(b) rejection is earnestly and respectfully solicited.

Claim 3 depend from claim 1 and includes all of the features of that claim plus additional features which are not disclosed or suggested by Grafius. Therefore, it is respectfully submitted that claim 3 also patentably distinguishes over Grafius.

Claim 12 recites "a controller to control the operation of the robot arm to move the tool body around the rotation axis while keeping the tool body in contact with the tool tip member by the tip member holder." As discussed above in regard to claim 1, at least this feature is not disclosed or suggested by Grafius. In other words, because the tip member holder in claim 12 is

provided at a position offset from the recited rotation axis around which it moves, and because neither of the spindles 138 and 140 of Grafius rotates around a rotation axis that is offset from the respective spindles 138 and 140, Grafius does not disclose or suggest moving the tool body around the rotation axis while keeping the tool body in contact with the tool tip member by the tip member holder. Therefore, it is respectfully submitted that claim 12 also patentably distinguishes over Grafius.

Claim Rejections Under 35 USC §103

In item 7 on page 5 of the Office Action the Examiner rejected claim 3 under 35 U.S.C. §103(a) as being unpatentable over Grafius in view of the Applicants' Description of the Related Art, which the Examiner has characterized as Admitted Prior Art.

As discussed in the previous section of this Amendment, claim 1 patentably distinguishes over Grafius. Further, the Applicants' Description of the Related Art does not cure the deficiencies of Grafius in regard to claim 1. As claim 3 depends from claim 1 and includes all of the features of that claim plus additional features which are not disclosed or suggested in Grafius or the Description of the Related Art, it is respectfully submitted that claim 3 also patentably distinguishes over the cited references.

In item 8 on pages 5-7 of the Office Action the Examiner rejected claims 1, 3, 11, and 12 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 4,845, 834, issued to Watson (hereinafter referred to as "Watson") in view of Grafius. By this Amendment, claim 11 has been cancelled without prejudice or disclaimer. The Applicants respectfully traverse the Examiner's rejections of the remaining claims.

The Examiner acknowledged that Watson does not disclose at least the feature of a controller to control the operation of said robot arm of said robot to move said tool body around said rotation axis while keeping said tool body in contact with said tool tip member held by said tip member holding means. The Examiner stated that this feature is disclosed in Grafius. However, in the previous section of this Amendment, it shown that Grafius does not disclose this and many other features of the present claimed invention. Thus, Grafius does not cure the deficiencies of Watson in regard to at least this feature of claims 1, 3, and 12. In order to form a proper §103 rejection, the cited references must combine to disclose all of the features of the rejected claims. Therefore, it is respectfully submitted that claims 1, 3, and 12 patentably distinguish over the cited references.

Further, even if Grafius did disclose this feature, and the Applicants respectfully submit that Grafius does not, the Applicants respectfully submit that the Examiner has not provided any reasons as to why one skilled in the art would modify Watson with this feature. As the length of the device shown in Watson appears to be relatively long, rotating a robot arm around the rotational axis along with one of the distal ends of the Watson device would apparently teach away from such a combination.

In item 9 on pages 7-8 of the Office Action the Examiner rejected claim 3 under 35 U.S.C. §103(a) as being unpatentable over Watson in view of Grafius and further in view of the Applicants' Description of the Related Art. As discussed previously in this Amendment, independent claim 1 patentably distinguishes over all of these cited references. Therefore, claim 3, which depends from claim 1 and includes all of the features of that claim plus additional features not disclosed or suggested by the cited references, also patentably distinguishes over the cited references.

New Claim 13

New claim 13 is directed to an apparatus to automatically change a tool tip member used by a robot, the apparatus including a tip member holder provided on the rotating member at a position offset from a rotation axis of the rotating member; wherein the rotating member is rotated so that the tip member holder rotates around the rotation axis of the rotating member while threading the tool tip member onto or off of the tool body on the robot arm.

Therefore, it is respectfully submitted that claim 13 patentably distinguishes over the cited references.

Summary

In accordance with the foregoing, claim 11 has been cancelled without prejudice or disclaimer, claim 1 has been amended to remove a grammatical error and to remove a feature added by the Amendment of filed on March 22, 2006, and new claim 13 has been added. No new matter has been presented. Thus, claims 1, 3, and 12-13 are pending and under consideration.

There being no further outstanding objections or rejections, it is respectfully submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

STAAS & HALSEY LLP

Date: 07/24/06

By: Thomas L. Jones
Thomas L. Jones
Registration No. 53,908

1201 New York Avenue, NW, Suite 700
Washington, D.C. 20005
Telephone: (202) 434-1500
Facsimile: (202) 434-1501